

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:
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Date of mailing
(day/month/year) **28 JAN 2005**

Applicant's or agent's file reference

FOR FURTHER ACTION

See paragraph 2 below

63463.000003

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US04/10979

09 April 2004 (09.04.2004)

09 April 2003 (09.04.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): G02F 1/03 and US Cl.: 359/241

Applicant

CHAHROUDI, DAY

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

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Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>2-13, 15-23, 25, 26, 29-38, 40-46</u>	YES
	Claims <u>1, 14, 24, 27, 28, 39, 47</u>	NO
Inventive step (IS)	Claims <u>46</u>	YES
	Claims <u>1-45 and 47</u>	NO
Industrial applicability (IA)	Claims <u>1-47</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Please See Continuation Sheet

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

1. Claims 18, 45 and 47 are objected to under PCT Rule 66.2(a)(iii) as containing the following defect(s) in the form or contents thereof:

Claims 18 and 47 are improper because multiple dependent claims shall not serve as a basis for any other multiple dependent claim.

Claim 45 is improper because any dependent claim which refers to more than one other claim ("multiple dependent claim ") shall refer to such claims in the alternative only.

2. Claims 1 and 14 lack novelty under PCT Article 33(2) as being anticipated by Byker et al. (6084702).

Re claim 1, Byker et al. teaches for example in fig. 1b, a light valve consisting of: two cover layers (20, 70) at least one of which is transparent (20) and an optically active layer (50) between these cover layers, with the optically active layer consisting of: a polymer dissolved in a solvent (col. 12, ln. 14-17), with the polymer and the solvent reversibly forming finely divided separate phases upon heating to a specific temperature (col. 9, ln. 32-40), thereby reversibly turning the optically active layer from relatively transparent to relatively opaque (col. 4, ln. 26-38), characterized in that most of said polymer is formed between said cover layers by polymerizing a monomer which is dissolved in said solvent (col. 12, ln. 30-37).

Re claim 14, Byker et al. teaches for example, said polymer formed does not react with said solvent (col. 4, ln. 36-38), and/or oxygen (col. 17, ln. 37-43), and/or sunlight (col. 18, ln. 65).

3. Claims 2, 4-13 and 15-23 lack an inventive step under PCT Article 33(3) as being obvious over Byker et al. (6084702).

Re claim 2, Byker et al. teaches for example, said monomer is soluble in said solvent (col. 12, ln. 15-20), at a temperature low enough that the heat of polymerization of said monomer does not raise to its phase separation temperature (col. 10, ln. 15-20) the solution consisting of said solvent, plus said monomer, plus the said polymer which is in the process of being formed from said monomer (col. 12, ln. 30-38).

But, Byker et al. fails to explicitly teach said monomer is at least 15% soluble in said solvent.

However, Byker et al. teaches for example, dissolving the thermochromic system (col. 12, ln. 45-47).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Byker et al. to teach said monomer is at least 15% soluble in said solvent, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Re claim 3, Byker et al. teaches for example, a crosslinking monomer which copolymerizes with said monomer, and which is added to so that polymerization forms a crosslinked gel (col. 12, ln. 37-40).

But, Byker et al. fails to explicitly teach a crosslinking monomer with a functionality of two or more.

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In case the space in any of the preceding boxes is not sufficient.

However, Byker et al. teaches for example, varying the additives in the thermochromic system (col. 18, ln. 60-67 to col. 19, ln. 1-5), in particular plasticizers and fillers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Byker et al. to include a crosslinking monomer with a functionality of two or more in order to reduce the amount of additives to the thermochromic system.

Re claims 4-13, 15-17 and 19-23, Byker et al. further teaches for example, varying the solvents (col. 12, ln. 14-19), additives (col. 18, ln. 60-67 to col. 19, ln. 1-5) and chemical composition (col. 4 to col. 13) of the thermochromic system and further teach varying the embodiments of compositions. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the various embodiments to teach the claimed limitations in order to provide greater versatility to transmit or reflect different types of light.

Re claim 18, Byker et al. further teaches for example in fig. 1b, they are used to make architectural glazings that control unwanted solar heat or glare (col. 1, ln. 46-49).

Claims 24, 27, 28, 39 and 47 lack novelty under PCT Article 33(2) as being anticipated by Tonazzi et al. (5856211).

Re claim 24, Tonazzi et al. teaches for example in fig. 1B, a process for making light valves consisting of: forming a seal (15) between two cover sheets (11, 12) at the circumference of the smaller sheet (11), optionally with fill and vent ports (13) in the seal (col. 6, ln. 2-3), and with the seal spacing apart the cover sheet (col. 5, ln. 64), thus forming a cavity (16), characterized by: injecting into said cavity a liquid (col. 5, ln. 41-44) which then becomes a solid layer (col. 5, ln. 46-50), with the layer having a variable transmission of light (col. 1, ln. 18-20).

Re claim 27, Tonazzi et al. further teaches for example, said cover sheets are etched to improve the adhesion between said cover sheet and said solid layer (col. 14, ln. 65-66).

Re claim 28, Tonazzi et al. further teaches for example, a silane (col. 14, ln. 5-6) is applied to said cover sheet to improve the adhesion (col. 14, ln. 5-6) between said cover sheet and said solid layer (col. 14, ln. 5-6).

Re claim 39, Tonazzi et al. further teaches for example, said seal is made from a ribbon of adhesive (col. 13, ln. 29).

Re claim 47, Tonazzi et al. further teaches for example, the processes are used to make architectural glazings that control unwanted solar heat or glare (col. 1, ln. 23-24).

Claims 29-38, 40, 42 and 43 lack an inventive step under PCT Article 33(3) as being obvious over Tonazzi et al. (5856211).

Re claim 29, Tonazzi et al. further teaches for example, a silane (col. 14, ln. 5-6).

But, Tonazzi et al. fails to explicitly teach a vinyl silane.

However, Tonazzi teaches the silane is a silane based primer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tonazzi et al. to include vinyl silane, since silane based primers and vinyl silane are known equivalents and the selection of these would be within the level of ordinary skill in the art.

Re claim 30, Tonazzi et al. further teaches for example, said cover sheets are heated (col. 8, ln. 20-25).

But, Tonazzi et al. fails to explicitly teach heating to bond said silane to said cover sheets.

However, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tonazzi et al. to teach that the heating is to bond said silane to said cover sheets in order to provide adhesion.

Re claims 31-38 and 42, Tonazzi et al. further teaches for example, varying the process of filling including, heating (col. 8, ln. 20-25), cooling (col. 8, ln. 20-25), injecting (col. 9, ln. 54-55), flushing (col. 12, ln. 45) and pumping (col. 8, ln. 63-64) in various embodiments and further suggests varying the embodiments. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the various embodiments to teach the claimed limitations in order to provide versatility in processing in large scale.

Re claims 40 and 43, Tonazzi et al. further teaches for example, a sealant.

But, Tonazzi et al. fails to explicitly teach said seal is made from sealant that softens upon heating, and becomes a solid again on cooling.

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However, Tonazzi et al. teach varying the material of construction of the sealant (col. 13, ln. 29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tonazzi et al. to include sealant that softens upon heating, and becomes a solid again on cooling, since epoxy type sealants and a sealant that softens upon heating, and becomes a solid again on cooling are known equivalents and the selection of these would be within the level of ordinary skill in the art.

Claim 41 an inventive step under PCT Article 33(3) as being obvious over Tonazzi et al. (5856211) in view of Byker et al. (6084702).

Re claim 41, Tonazzi et al. further teaches for example, the process as disclosed above.

But, Tonazzi et al. fail to explicitly teach the two cover sheets with said sealant placed between them are placed in a roller press which is heated in order to soften and compress the said sealant in order to form the desired spacing between said cover sheets, and to bond said sheets together.

However, within the same field of endeavor, Byker et al. teaches for example two cover sheets with said sealant placed between them are placed in a roller press which is heated in order to soften and compress the said sealant in order to form the desired spacing between said cover sheets, and to bond said sheets together (col. 27, ln. 66-67 to col. 28, ln. 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tonazzi et al. with the process of Byker et al. in order to provide an improved seal.

Claims 44-46 lack an inventive step under PCT Article 33(3) as being obvious over Tonazzi et al. (5856211) in view of Crawford et al. (6094290).

Re claims 44 and 45, Tonazzi teaches the process as disclosed above.

But, Tonazzi et al. fails to explicitly teach said outer seal is made with a sealant based on a saturated hydrocarbon liquid or solid polymer, with functionality for crosslinking.

However, within the same field of endeavor, Crawford et al. teaches for example, outer seal is made with a sealant based on a solid polymer (col. 4, ln. 22-23), with functionality for crosslinking

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Tonazzi with the sealant of Crawford et al. in order to provide a flexible sealant.

Claim 46 meets the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest producing said light valve on production machinery that has been designed for making double pane windows, and that has been modified for making said cavity thinner, and has been added on to enable injecting said liquid into said cavity.